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C2  
said particles for the dispersing and mitigating layer are stainless steel, HASTELLOY®,  
INCONEL®, titanium, or zirconium.

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#### REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Initially, the Examiner is requested to consider the Information Disclosure Statement filed on January 9, 2001, but not reviewed by the Examiner prior to the mailing of the outstanding Office Action on January 31, 2001.

Claims 1, 2, 6-10, 13-15 and 19-30 are currently pending in this application. By this Amendment, the applicants amend Claims 6 and 23; leave Claims 1, 2, 7-10, 13-15, 19-22 and 24-30 unamended; and add new Claims 31-38.

In the outstanding Office Action, Claims 6, 13, 15, 29 and 30 were rejected under 35 U.S.C. §102(e) for anticipation by the U.S. Patent of Gentry; Claims 7, 14 and 19 were rejected under 35 U.S.C. §103(a) for obviousness over the U.S. Patent of Gentry; Claims 1, 2, 8-10 and 28 were rejected under 35 U.S.C. §103(a) for obviousness over the U.S. Patent of Gentry in view of the published European Patent Application No. 0 636 399; Claims 20, 23, 26 and 27 were rejected under 35 U.S.C. §103(a) for obviousness over the International Patent No. WO 96/13463 in view of the U.S. Patent of Gentry; and Claims 21, 22, 24 and 25 were rejected under 35 U.S.C. §103(a) for obviousness over the International Patent No. WO 96/13463 in view of the U.S. Patent of Gentry, taken further in view of the published European Patent Application No. 0 636 399.

In order to overcome the rejection of Claim 6 for anticipation by Gentry and also to overcome the rejection of Claim 23 for obviousness over the International Patent in view of

Gentry, these two independent Claims 6 and 23 have been amended to recite the specific materials comprising the particles for the dispersing and mitigating layer. The rejections of all of the remaining Claims 1, 2, 7-10, 13-15, 19-22, and 24-30 are hereby traversed.

Independent Claims 6 and 23 now recite the feature that the water-permeable pressure layer is composed of a specific material, namely, rigid metal particles or ceramic particles.

Independent Claims 1, 2, 21 and 22 remain unamended and continue to recite the feature that a vertical partition is configured to divide a boundary area between an upper part of the packed bed and the pressure layer into a plurality of respective segments formed in a vertical section.

Independent Claims 13, 15, 27 and 30 remain unamended and continue to recite the feature that the dispersing and mitigating layer is composed of a specific material, namely, rigid metallic particles or ceramic particles.

Concerning the independent Claims 6 and 23, the rejection is believed to be overcome by the addition of a limitation about the specific gravity of the material constituting the water-permeable pressure layer. Essentially, independent Claims 6 and 23 have been amended to recite the limitation that, wherein the water-permeable pressure layer is a substance having a plurality of rigid metal particles or ceramic particles, “the substance has a specific gravity ranging from 4 to 12 g/cm<sup>3</sup>”. Support for this limitation may be found in the specification at page 23 on line 13.

Although the specific gravity of the alumina balls used by Gentry is not explicitly disclosed in his specification at column 6, line 15, the specific gravity of alumina balls is generally known to be about two g/cm<sup>3</sup> or less. Accordingly, the limitation about the substance of the water-permeable pressure layer having a specific gravity ranging from four to 12 g/cm<sup>3</sup>

in Claims 6 and 23 clearly differentiates the present invention from the prior art teachings of Gentry.

The prior art device of Gentry and the present invention are different in terms of the kind of substances constituting the water-permeable pressure layer. In the present invention, the water-permeable pressure layer is specifically designed to have a load sufficient to suppress substantially a movement of the solid catalyst while securing flexibility to follow up the movement of the solid catalyst packed bed, as well as having water permeability. For this purpose, the metal particles or the ceramic particles having the specific gravity ranging from four to 12 g/cm<sup>3</sup> are preferably used as the granular substance constituting the water-permeable pressure layer. See the specification on page 23 at line 13.

If the specific gravity is too small, for example, two g/cm<sup>3</sup> or less, sufficient pressure cannot be given to the solid catalyst packed bed. See the specification on page 23 at lines 14 and 15.

On the other hand, Gentry uses alumina balls which have a specific gravity of about two g/cm<sup>3</sup> or less. Using alumina balls having such a low specific gravity fails to exert on the water-permeable pressure layer a load sufficient to suppress movement of the solid catalyst packed bed. In other words, the use of such lightweight alumina balls fails to provide the desired effect obtained by the water-permeable pressure layer of the present invention.

Furthermore, the prior art device of Gentry is designed to provide merely a catalyst capable of efficiently carrying out a particular chemical reaction. Gentry neither has the idea nor the motivation to prevent the abrasion of the solid catalyst effectively. Accordingly, it should be clear that Gentry likewise lacks the idea or motivation for using a granular substance having a high specific gravity sufficient to prevent movement of the solid catalyst packed layer in order to eliminate the abrasion of the solid catalyst.

Therefore, in view of the amendments made to independent Claims 6 and 23, the rejection of Claim 6 for anticipation by Gentry and the rejection of Claim 23 for obviousness over the International Patent in view of Gentry are believed to be overcome.

Concerning the rejection of Claims 1, 2, 8-10 and 28 for obviousness over Gentry in view of the European Patent Application, this rejection is believed to be erroneous because the European Patent Application does not recite any water-permeable pressure layer which is an essential element of the present invention. Furthermore, the manner of providing the vertical partition disclosed in the European Patent Application in Fig. 3 is fundamentally different from the manner of providing the vertical partition in the present invention, as shown in Figs. 18 and 19. Therefore, it is the applicants' position that the teachings of the European Patent Application are not properly combinable with the primary prior art reference of Gentry. Thus, careful reconsideration and withdrawal of the rejection of Claims 1, 2, 8-10 and 28 for obviousness over Gentry in view of the European Patent Application are earnestly solicited.

The rejection of Claims 20, 23, 26 and 27 for obviousness over the International Patent in view of Gentry is believed to be erroneous because the International Patent merely recites a general device for a wet air oxidation process and does not recite at all any water-permeable pressure layer which, as stated above, is an essential element of the present invention. Accordingly, it is the applicants' position that the teachings of Gentry are not properly combinable with the teachings of the International Patent. Thus, it would not be obvious for a person of skill in this particular art to come up with the present invention by combining Gentry who discloses one arrangement with the teachings of the International Patent which discloses an entirely different arrangement without the water-permeable pressure layer of the present invention.

By this Amendment, the applicants hereby add new dependent Claims 31-38 which respectively depend upon independent Claims 13, 15, 27 and 30. These new dependent Claims 31-38 recite that the particles for the dispersing and mitigating layer are iron, copper, stainless steel, HASTELLOY®, INCONEL®, titanium, zirconium, titania, zirconia, silicon nitride, carbon nitride, or glass.

Support for the recitation of the subject matter in new dependent Claims 31-38 is found in the specification beginning on page 39 at line 18 and ending on page 40 at line 2.

The particles for the dispersing and mitigating layer have a higher specific gravity than the alumina balls which are used by Gentry. Although alumina is recited as one of the substances that may be used for the dispersing and mitigating layer, new Claims 31-38 do not recite alumina because alumina does not have a specific gravity sufficient to obtain the desired effect required for the dispersing and mitigating layer with respect to high abrasion resistance, corrosion resistance, and strength. See page 39 of the specification at lines 15-17.

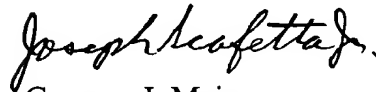
Based upon the above discussion, it is respectfully submitted that the independent claims already in this application are patentably distinguishable over the applied references and that new dependent Claims 31-38 are likewise patentably distinguishable thereover.

Consequently, in view of the foregoing amendments and remarks, no further issues are believed to be outstanding and the present application should be considered in clear condition

for formal allowance. Therefore, a quick and favorable action to that effect is respectfully requested.

Respectfully submitted,

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Serial No.: 09/147,428

Amendment Filed on:

4-30-01

IN THE CLAIMS

--6. (Thrice Amended) An apparatus for preventing abrasion of a solid catalyst and/or a solid adsorbent while treating waste water, comprising:

a packed bed of the solid catalyst and/or the solid adsorbent; and

a water-permeable pressure layer having a load which can suppress a deformation of the packed bed of the solid catalyst and/or the solid adsorbent;

wherein the water-permeable pressure layer is provided on the packed bed of the solid catalyst and/or the solid adsorbent; [and]

wherein the water-permeable pressure layer is a substance having a plurality of rigid metal particles or ceramic particles; and

wherein the substance has a specific gravity ranging from four to 12 g/cm<sup>3</sup>.

23. (Amended.) An apparatus for [prevent] preventing abrasion of a solid catalyst and/or a solid adsorbent while treating waste water, comprising:

a packed bed of the solid catalyst and/or the solid adsorbent; and

a water-permeable pressure layer having a load which can suppress a deformation of the packed bed of the solid catalyst and/or the solid adsorbent;

wherein the water-permeable pressure layer is provided on the packed bed of the solid catalyst and/or the solid adsorbent;

wherein the water-permeable pressure layer is a substance having a plurality of rigid metal particles or ceramic particles; [and]

wherein the substance has a specific gravity ranging from four to 12 g/cm<sup>3</sup>; and

wherein the packed bed is provided in a wet-oxidation treatment unit.

- 31. (New)
- 32. (New)
- 33. (New)
- 34. (New)
- 35. (New)
- 36. (New)
- 37. (New)
- 38. (New)--